AMENDMENTS TO THE CLAIMS

Applicant submits below a complete listing of the current claims, including marked-up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing. This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A digital subscriber line transmission system using QAM modulation on N=~~2048 or~~ 4096/p tones spaced by 4.3125 kHz wherein p and q are powers of 2 (p = 1, 2, 4, 8, ...; q = 1, 2, 4, 8, ...), including at least two operating modes:

a VDSL standard operating mode where all N tones are used to convey significant values; and

an ADSL standard operating mode where only the first n=~~128 or 256~~ among the N tones are used to convey significant values;

comprising, on the transmitter side:

an inverse fast Fourier transform circuit having N frequency domain value inputs corresponding to said tones, among which only the first receive values corresponding to the n used tones, the remaining inputs being zeroed,

a decimator providing one sample for every r samples output by the inverse fast Fourier transform circuit, with r = N/n,

a digital-to-analog converter coupled between the decimator and a subscriber line;

comprising, on the receiver side:

an analog-to-digital converter sampling the signal on the subscriber line at a frequency F/r, where F is the operating frequency of the inverse fast Fourier transform circuit;

an interpolator generating samples at frequency F from the samples provided by the analog-to-digital converter; and

a fast Fourier transform circuit operating at frequency F and receiving the samples from the interpolator through a time domain equalizer;

wherein, when all N tones are used, the time domain equalizer is bypassed.

Please cancel claims 2 and 3.

4. (Previously presented) The system of claim 1 comprising, at a transmitter side, an inverse fast Fourier transform circuit having:
a number of frequency domain inputs selectable at least among values N and n; and
an operating frequency selectable at least among two values F and fn proportional, respectively, to the frequency of the last of the N tones and the last of the n tones.

5. (Previously presented) The system of claim 4, comprising, at a receiver side, a fast Fourier transform circuit having:
a number of frequency domain outputs selectable at least among values N and n; and
an operating frequency selectable at least among values F and fn.

6. (Previously presented) The system of claim 5, wherein each of the inverse fast Fourier transform and fast Fourier transform circuits includes five radix-4 stages and a last stage having a radix selectable among 2 and 4, all connected to operate in pipeline mode, the desired number of frequency domain inputs or outputs of the circuit being selectable by bypassing a number of the five radix-4 stages and by selecting the radix of the last stage.

7. (Previously presented) The system of claim 6, wherein the desired number of frequency domain inputs or outputs of the circuit is the product of the radices of all stages which are not bypassed.

8. (Previously presented) The system of claim 6:
wherein each stage receives and provides complex coefficients at a digital data transmission rate;

wherein each complex coefficient has a real part and an imaginary part;

wherein the real part of each complex coefficient and the imaginary part of each complex coefficient are processed in two distinct cycles; and

wherein the operating frequency of the system is twice the digital data transmission rate.

9. (Previously presented) The system of claim 6, wherein an ADSL-Lite standard operating mode is implemented by bypassing two of the five radix-4 stages and selecting the last stage to be radix-2.

10. (Previously presented) The system of claim 9, wherein the operating frequency is 1.104 MHz.

11. (Previously presented) The system of claim 6, wherein an ADSL standard operating mode is implemented by bypassing two of the five radix-4 stages and selecting the last stage to be radix-4.

12. (Previously presented) The system of claim 11, wherein the operating frequency is 2.208 MHz.

13. (Previously presented) The system of claim 6, wherein a VDSL standard operating mode, using N= 2048 tones, is implemented by bypassing none of the five radix-4 stages and selecting the last stage to be radix-2.

14. (Previously presented) The system of claim 13, wherein the operating frequency is 17.664 MHz.

15. (Previously presented) The system of claim 6, wherein a VDSL standard operating mode , using N=4096 tones, is implemented by bypassing none of the five radix-4 stages and selecting the last stage to be radix-4.

16. (Previously presented) The system of claim 15, wherein the operating frequency is 35.328 MHz.

17. (Previously presented) The system of claim 6, wherein a VDSL standard operating mode being used for a VDSL-TDD transmission using 512 tones is implemented by bypassing one of the radix-4 stages and selecting the last stage to be radix-2.

18. (Previously presented) The system of claim 6, wherein a VDSL standard operating mode being used for a VDSL-TDD transmission using 256 tones is implemented by bypassing two of the radix-4 stages and selecting the last stage to be radix-4.

19. (Previously presented) The system of claim 6, wherein a VDSL standard operating mode may be used for a VDSL-TDD transmission, the VDSL-TDD transmission having a maximum frequency of 17.664 MHz.

20. (Previously presented) The system of claim 6, wherein a VDSL standard operating mode may be used for a VDSL-TDD transmission, the VDSL-TDD transmission having a maximum frequency of 35.328 MHz.

21. (Previously presented) The system of claim 1, wherein a receiving modem can identify the standard operating mode before establishing communication with a transmitting modem.

22. (Previously presented) The system of claim 21,

wherein the transmitting modem sends a modem identification signature; and

wherein the receiving modem, by identifying which of the N tones are present in the modem identification signature, identifies the standard operating mode.

23. (Previously presented) The system of claim 22, wherein the modem identification signature comprises a signal comprising a plurality of the N tones.

24. (Previously presented) The system of claim 23, wherein the modem identification signature of an ADSL modem comprises a plurality of consecutive tones.

25. (Previously presented) The system of claim 23,

wherein the transmitting modem is an ADSL modem; and

wherein the modem identification signature comprises every pth tone of the N tones, p being a power of 2.

26. (Previously presented) The system of claim 23, wherein the transmitting modem is a VDSL Zipper modem and the receiving modem is a VDSL-TDD modem; and

wherein the modem identification signature comprises every 8^{th} tone of the VDSL Zipper modem.

27. (Previously presented) The system of claim 23, wherein the transmitting modem is a VDSL Zipper modem and the receiving modem is a VDSL-TDD modem; and

wherein the modem identification signature comprises every 4^{th} tone of the VDSL Zipper modem.

Please cancel claims 28-54 without prejudice or disclaimer.

Please add the following new claims 55 and 56.

55. The system of claim 1, wherein n = 128 or 256.

56. The system of claim 1, wherein n = 2512.